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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No. 6972 US
First Inventor or Application Identifier KATHRYN A. ENGHOLM
Title STATUS RIBBON FOR DISPLAY FOR MULTIPLE
Express Mail Label No. EL638020519US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

- ☒ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
- ☒ Specification [Total Pages 7]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the invention
 - Brief Summary of the invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
- ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 1]
- Oath or Declaration [Total Pages 2]
 - ☒ Newly executed (original or copy)
 - ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 16 completed)
 - ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

***NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).**

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

ACCOMPANYING APPLICATION PARTS

- ☐ Assignment Papers (cover sheet & document(s))
- ☐ 37 C.F.R. § 3.73(b) Statement of Power of Attorney (when there is an assignee)
- ☐ English Translation Document (if applicable)
- ☒ Information Disclosure Statement (IDS)/PTO-1449 [2] Copies of IDS Citations
- ☐ Preliminary Amendment
- ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
 - * Small Entity Statement filed in prior application, Status still proper and desired (PTO/SB/09-12)
- ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
- ☐ Other: _____

16. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:
☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: _____

Prior application information: Examiner _____ Group / Art Unit: _____
For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

17. CORRESPONDENCE ADDRESS

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Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

TITLE OF THE INVENTION

STATUS RIBBON FOR DISPLAY FOR MULTIPLE CHANNELS/CODES

5 BACKGROUND OF THE INVENTION

The present invention relates to the display of signal characteristics, and more particularly to a status ribbon for display of signal characteristics for multiple channels/codes.

10 A band of frequencies may contain many channels of content, such as in cable television systems, or a single digital communications radio frequency (RF) channel may contain many codes, such as in wireless telephone systems. An operator trying to quickly assess the health of such systems would like a way to scan the power, or some other measurement parameter, for each channel or code and view the results in a single display.

15 Such a single display of power for multiple channels of a cable television system is disclosed in U.S. Patent No. 4,685,065 for a portable spectrum analyzer. In this implementation the single display consists of a bar graph where the channel number is along the horizontal axis and the power is along the vertical axis, with the height of the bar indicating the relative power for

20 each of the channels. This display is limited on the number of channels that may be compacted into a signal view. Also this does not address the need to translate measured values into pass/fail values for easier interpretation for the operator.

Also for the digital communications RF channel with many content

25 "codes", the operator may want to scan the activity for each code and view

the results on the single display. However there may be more codes than a display device has pixels horizontally. Prior art does not represent multiple codes in a single indicator.

What is desired is an alternative display of signal characteristics for multiple channels/codes that compacts many more channels/codes into a single view, translates measured values into pass/fail values, and is intuitive for an operator, or alternatively compacts many codes within an RF channel into the single view so a single indicator represents multiple codes.

BRIEF SUMMARY OF THE INVENTION

Accordingly the present invention provides a status ribbon for display of signal characteristics for multiple channels/codes. The status ribbon has a plurality of stripes representing channels within a frequency range of interest or codes within a digital communications RF channel. A characteristic, such as color or brightness, of each stripe represents a value for the channel(s) or code(s), such as a value range, a pass/caution/fail condition value, code activity, power (maximum or average), spreading factor, etc. A draggable window also may be provided for selecting a subset of contiguous stripes for additional detail. The subset may be displayed textually adjacent the status ribbon and may include channel number, frequency, signal standard, etc. Also for stripes representing multiple channels/codes an additional status ribbon may be displayed which includes as separate stripes each channel/code within the window.

The objects, advantages and other novel features of the present invention are apparent from the following detailed description when read in conjunction with the appended claims and attached drawing.

5 BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

Fig. 1 is a plan view of a status ribbon for display of signal parameters for multiple channels according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

10 Referring now to Fig. 1 a status ribbon **10** is shown having a band of vertical stripes **12**, each stripe pertaining to one or more channels in a frequency range of interest or to one or more codes within a single digital communications RF channel. The color or brightness of the stripes represents a value for a signal parameter for the channel(s)/code(s), such as
15 maximum or average power, or the presence or absence of activity in the codes each stripe covers. This value may be represented either as a scalar value according to a color gradient or as a converted status value, such as pass/caution/fail. For example for the grey scale example shown "white" may be equivalent to "pass", "grey" may be equivalent to caution and "black" may
20 be equivalent to "fail." Or alternatively "white" may represent a value greater than 3 dB, "grey" may represent a value between 0-3 dB, and black may represent a value less than 0 dB. For a color representation "green" may represent "pass", "yellow" may represent "caution" and "red" may represent "fail." Or alternatively the colors may represent particular power levels or
25 code activity levels.

In the most compressed ribbon **10** each stripe **12** may represent a multiplicity of channels/codes, as indicated above, through any decimation method. For instance, if the stripes represent power, a single stripe representing several channels/codes may display maximum power across the several channels/codes or average power. If the stripe represents pass/fail, the decimation method may indicate "fail" if any of the included channels/codes is "fail" and indicate "pass" if all are "pass." The expanded views, either text table or zoomed in ribbon, are useful for viewing the underlying per-channel/code status that is buried by the decimation.

Additionally there may be a draggable box **14** around a set of contiguous stripes **12**, or some other visible device to allow a user to select a subset of the channels within the frequency range of interest or codes within a single channel in order to view additional detail. The additional detail may include channel number, signal standard, frequency, etc. or code number, power, spreading factor, etc. The additional detail may be represented in a text table displayed near the status ribbon **10**. Also an expanded status ribbon **10'** may be displayed where each stripe **12'** represents only a single code. Also a line or bar graph may be shown to display detailed values expanded for each individual channel/code in the expansion zone indicated by the window **14**.

Thus the present invention provides a status ribbon having stripes for each channel/code or each decimated group of channels/codes with the color or brightness of each stripe indicating a value for a signal parameter or a pass/caution/fail value.

CLAIM OR CLAIMS

WHAT IS CLAIMED IS:

- 5 1. A display of signal characteristics for multiple channels/codes within a region of interest comprising a status ribbon having a plurality of stripes, each stripe representing at least one channel/code within the region of interest and having a trait representative of a value for the at least one channel/code.
- 10 2. The display of claim 1 wherein the trait represents a measured value for a signal parameter of the at least one channel where the region of interest is a frequency range having multiple channels.
- 15 3. The display of claim 1 wherein the trait represents a condition for a signal parameter of the at least one channel where the region of interest is a frequency range having multiple channels.
4. The display of claim 3 wherein the condition is selected from the group consisting of pass and fail.
- 20 5. The display of claim 3 wherein the condition is selected from the group consisting of pass, caution and fail.
6. The display of claim 1 wherein the trait is color.

7. The display of claim 1 wherein the trait is brightness.

8. The display of claim 1 further comprising a draggable window
encompassing a subset of the channels for which additional detail is desired
5 where the region of interest is a frequency range having multiple channels.

9. The display of claim 8 further comprising a text display adjacent the status
ribbon containing the additional detail.

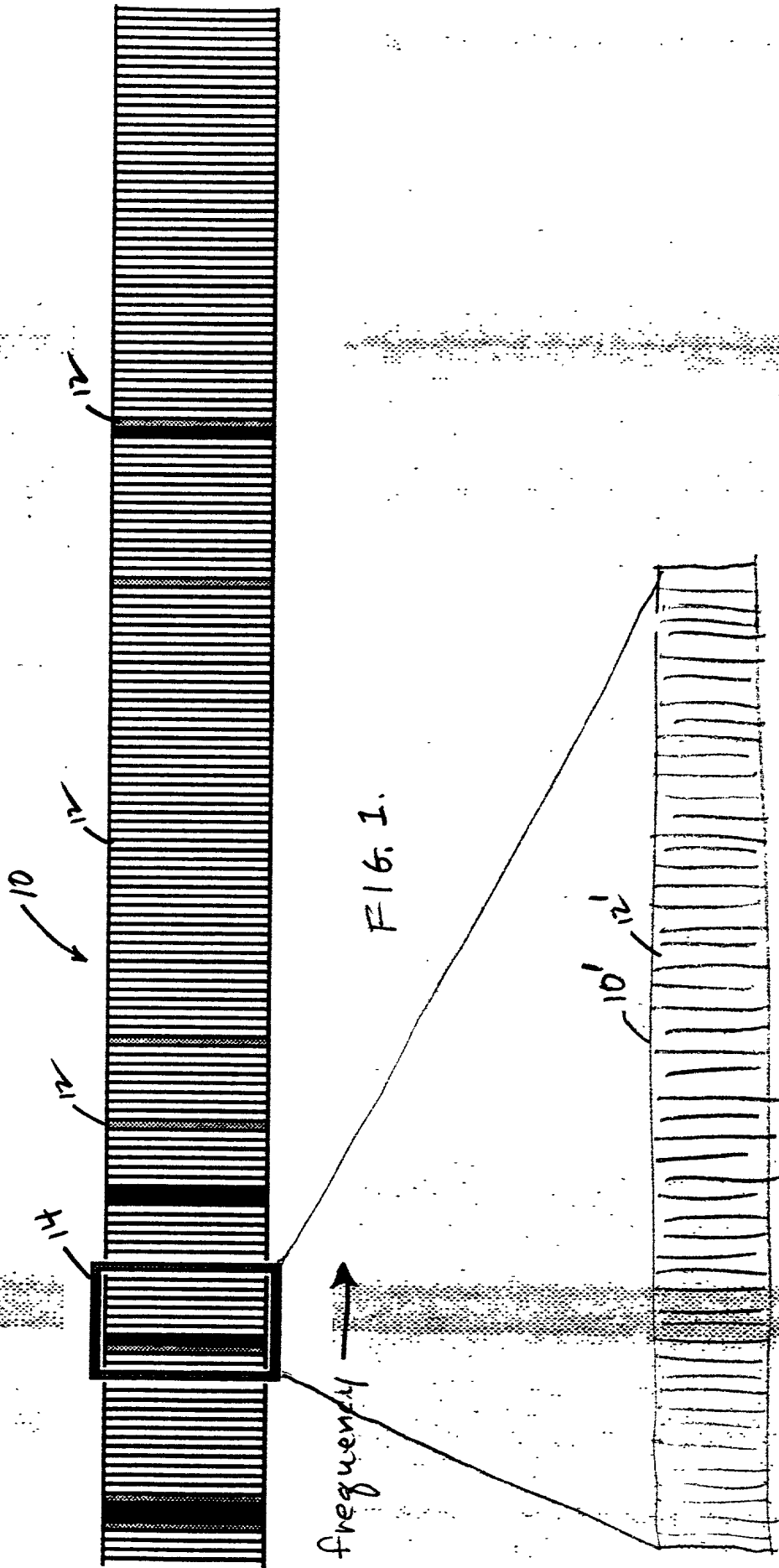
10 10. The display of claim 1 wherein the trait represents activity for the at least
one code where the region of interest is a digital communications radio
frequency channel.

11. The display of claim 1 wherein the trait represents a parameter for the at
15 least one code where the region of interest is a digital communications radio
frequency channel.

12. The display of claim 1 further comprising a draggable window
encompassing a subset of codes for which additional detail is desired where
20 the region of interest is a digital communications radio frequency channel.

13. The display of claim 12 further comprising a subsidiary window having a
plurality of stripes representing the subset of codes, each stripe representing
a single one of the subset of codes and having the trait representative of the
25 value for the single one of the subset of codes.

A status ribbon to display a signal characteristic for multiple channels/codes within a region of interest has a plurality of stripes. A value for each stripe is represented by a trait of the stripe, such as color or brightness. The trait may represent a range of a signal parameter or may represent a pass/caution/fail value for the signal parameter, or may represent code activity. A window may be used to select a subset of channels/codes for additional detail, the additional detail being displayed textually adjacent the status ribbon. Also a subsidiary status ribbon may be displayed for channels/codes where each stripe of the primary status ribbon represents more than one channel/code, each stripe in the subsidiary status ribbon representing a single channel/code.



DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: _____

STATUS RIBBON FOR DISPLAY FOR MULTIPLE CHANNELS/CODES

the specification of which: (check one)

X is attached hereto.

_____ was filed on _____ as Application Serial No. _____

and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I have identified below any foreign application(s) for patent or inventor's certificate from which I claim foreign priority benefits under Title 35, United States Code, Section 119 and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	_____ Yes	_____ No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	_____ Yes	_____ No

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of the above-identified specification is not disclosed in the prior United States application(s) in the matter required by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status-patented, pending, abandoned)
_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status-patented, pending, abandoned)

Docket No.: 6972 US

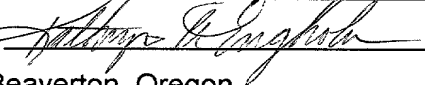
I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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